Editorial

Local and regional anesthetic techniques in strabismus surgery: Advantages and disadvantages

Técnicas anestésicas locorregionales en la cirugía de estrabismo: ventajas e inconvenientes

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The development of locoregional anesthesia in ophthalmological surgery has diminished anesthetic risks and facilitated faster post-surgery recovery, both of which are very important in ambulatory surgery. Even though in many health centers surgical correction of strabismus is performed under general anesthesia, in recent years an increasing number of ophthalmologists execute the operation with locoregional anesthesia in adult patients. In addition, strabismus surgery is one of the most painful ophthalmological interventions and therefore could benefit from the optimum analgesia provided by locoregional anesthesia in the first hours after surgery. Various locoregional anesthesia techniques also include additional benefits such as the ability to explore and rectify the result of the surgery with the patient being awake before completing the surgery.

Both retrobulbar and peribulbar anesthesia have been utilized for strabismus surgery in adult and pediatric patients, 1,2 in combination with general anesthesia for the latter group. As this type of anesthesia desensitizes afferent pathways, the incidence of oculocardiac reflex during surgery has diminished. 3 An additional advantage attributed to local regional anesthesia is the reduction of post-surgery nausea and vomiting which is the most frequent complication in strabismus surgery. 3 Post-surgery nausea and vomiting alter the quality of life as much as pain or even more as well as interrupting or delaying diets and oral medication, increasing costs, producing a negative impact in the quality perceived by the patient and, in surgery units without admission, generating failed releases and readmissions. However, retrobulbar and peribulbar anesthesia are not free of complications which could produce non-reversible effects in vision or endanger the life of the patient such as hemorrhage, ocular perforation, optic nerve injury, subdural injection or intravascular injection. In addition, the ocular akinesia and anatomic distortion which could be produced by the injection of large volumes in the orbital space could give rise to problems for the correct adjustment of ocular alignment. In addition, late post-surgery diplopia could arise due to myotoxicity caused by the local anesthetic, producing muscular fibrosis or hypertrophia. 4

Subtenon anesthesia offers ocular anesthesia and akinesia conditions similar to those of peribulbar anesthesia, features a lower rate of major complications and its application is...
Subtenon anesthesia is safe and efficient for strabismus interventions in adults. Snir et al. have observed that patients intervened with said anesthesia have a lower incidence of oculocardiac reflex and post-surgery nausea and vomiting, as well as less post-surgery pain and higher satisfaction than patients intervened with general anesthesia. In addition, hospital stay of these patients has been observed to be shorter. The most frequent complication of subtenon anesthesia is subconjunctival hemorrhage, the main drawback of which is aesthetic. Severe complications caused by subtenon anesthesia are infrequent. However, nearly all the complications described in peribulbar anesthesia have also been observed with the subtenon technique.

The simplicity and safety provided by topical anesthesia have enabled its consolidation in usual clinical practice for many ophthalmological surgical procedures. It is a noninvasive technique with hardly any adverse effects while providing efficient anesthesia of the ocular surface. A large number of publications report satisfactory use of topical anesthesia for strabismus surgery in adults even though of said studies supplement the technique with intravenous hypnotic or opiate sedation to avoid possible discomfort for the patients as, in some cases, discomfort can occur in the dissection and manipulation of the rectus muscles. Said discomfort can be avoided by careful manipulation of said muscles, administering local anesthetic or increasing the level of sedation. With the aim of improving the quality of topical anesthesia and avoiding patient discomfort during the intervention, Hakim et al. proposed applying local anesthetics in gel form to enable greater contact and penetration. In what concerns the results of the surgery, many authors sustain that the absence of akinesia provided by topical anesthesia and patient cooperation facilitates a more precise ocular alignment adjustment and lower re-intervention rates. In addition, lower incidence of oculocardiac reflex has been observed with this anesthetic technique.

Topical contact anesthesia is a variant of topical anesthesia consisting in the application of a gel sponge impregnated in local anesthetic over the ocular surface. The main advantage vis-à-vis conventional topical anesthesia applied with drops is greater penetration of the local anesthetic on the ocular surface, thus providing deeper and more comfortable anesthesia. In recent years, this characteristic has resulted in the use of topical anesthesia for ophthalmological surgeries which were formerly carried out with invasive anesthetic techniques. Aziz et al. were the first to apply this new anesthetic technique in adult patients intervened for strabismus, applying in the fornix a 2 cm × 2 cm pad of Microspponge™ (Alcon, Fort Worth, TX, USA) imbibed with 0.5% bupivacaine during 15 min. As with topical anesthesia, contact topical anesthesia produces discomfort in some patients during a muscular traction, particularly in the case of the medial rectus muscle. Authors also referred that the absence of extraocular muscle motor palsy enabled better adjustments of the suture during surgery.

Topical contact anesthesia has been applied at the Ophthalmology Service of the Miguel Servet University Hospital of Zaragoza for a number of years in trabeculectomy interventions and combined phacotrabeculectomy surgery. Recently, the use of this anesthetic technique has been extended to strabismus interventions in adults, applying a 2 cm × 2 cm segment of Spongostan® (Johnson & Johnson Medical Ltd., New Brunswick, USA) impregnated in 2% lidocaine and 0.75% bupivacaine (proportion 1:1) placed during 5 min in the conjunctival sac fundus on the side of the extraocular muscle on which the strabismus interventions will be performed.

**Fig. 1 – Application of contact anesthesia utilizing a 2 cm × 2 cm segment of Spongostan® (Johnson & Johnson Medical Ltd., New Brunswick, USA) impregnated in 2% lidocaine and 0.75% bupivacaine (proportion 1:1) placed during 5 min in the conjunctival sac fundus on the side of the extraocular muscle on which the strabismus interventions will be performed.**

**REFERENCES**